

# N.P.D.E.S. PERMITS FOR INDUSTRIAL FACILITY STORMWATER DISCHARGES

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## ABSTRACT

The U.S. Environmental Protection Agency (EPA) promulgated final regulations for the Water Quality Act of 1987 in November 1990 which will require industrial facilities to apply for permits to cover stormwater discharges. The regulations describing the permit application requirements are given in 40 CFR Parts 122, 123, 124, and 504. The regulations allow for an individual industry to submit an applicant or for group applications for industries that are in the same industrial category.

Industries can obtain permits through either individual application, group application or under a general permit.

For individual applications for direct stormwater discharges associated with industrial activities an application must be submitted by November 18, 1991. For group applications for direct stormwater discharges associated with industrial activities the group representative must submit Part I of the application by March 18, 1991. EPA will act on Part I applications within 60 days and then the group representative must submit Part II of the application within one year. General permits as of the date of this paper had not been promulgated. Draft general permit language issued in November 1990, indicate that a Notice of Intent (NOI) to be permitted under a General Permit will be required within 180 days of the effective date of the general permit. Stormwater Pollution Prevention Plans will be required within the same 180 days. Implementation of the Stormwater Pollution Prevention Plan is required within 365 days of the General Permit effective date.

This paper presents an overview of the stormwater permitting requirements for individual, group and general permits. In addition it provides a discussion of conceptual approaches for satisfying both the monitoring requirements and the ???

## INTRODUCTION

On November 16, 1990, EPA promulgated a Final Rule entitled "National Pollution Discharge Elimination System (NPDES) Permit Application for Storm Water Discharges." The rule establishes NPDES permit application requirements for storm water discharges associated with industrial activity; discharges from a storm sewer system serving a population of

25,000 or more; and discharges from municipal separate storm sewer systems serving a population of 100,000 or more but less than 250,000. It also sets forth the required components of municipal storm water quality management plans. The rule clarifies the statutory exemptions under the Clean Water Act that apply to mining operations and oil and gas exploration.

The regulations phase-in permit application requirements and deadlines. Additionally, different municipal and industrial criteria is used by EPA when deriving standards for industrial facilities then is applied for municipal storm sewer systems. The regulations require municipalities to prohibit non-storm water discharges including discharges from industrial facilities into the storm sewers.

The regulations provide several options for industrial facilities to obtain permits; group, individual or general permits. Each has disturbed advantages and disadvantages in times of administrative and implementation costs.

## NPDES PERMITS FOR INDUSTRIAL FACILITY STORM WATER DISCHARGES

The rule establishes a preliminary strategy for permitting storm water discharges associated with industrial activity. The strategy is intended to establish a framework for developing permitting priorities, and includes a four tiered set of priorities for issuing permits, as follows:

- Tier I - Baseline Permitting: One or more general permits will be developed to initially cover the majority of storm water discharges associated with industrial activity.
- Tier II - Watershed Permitting: Facilities within watersheds shown to be adversely affected by storm water discharges associated with industrial activity will be targeted for permitting.
- Tier III - Industry Specific Permitting: Specific industry categories will be targeted for individual or industry-specific permits which will be based on the contribution of the industry to water quality degradation, as well as BAT and BCT standards.
- Tier IV - Facility Specific Permitting: A variety of technical factors based on impacts to water quality and the appropriate standards will be used to target specific facilities for individual permits.

The NPDES regulatory scheme provides three major options for permitting storm water discharges associated with industrial activity: (1) Individual permit applications; (2) group applications; and (3) case-by-case requirements developed for general permit coverage.

The regulations allow for individual industries to submit an application, or group application for industries that are in the same industrial category, or for industries to be covered under a general permit in accordance with the Tier I baseline permitting approach.

### Individual Applications

For each participant, the following information must be provided:

- A) Maps of the site depicting the facility and the following site characteristics:
  - Approximate drainage area to each outfall;
  - Location of drainage and discharge structures, and buildings and paved areas;
  - Past and present areas used for outdoor storage and disposal of significant materials, material loading and access areas;
  - Existing structural control measures used to reduce pollutants in stormwater runoff;
  - Areas where pesticides, herbicides, soil conditioners, and fertilizers are applied;
  - Each hazardous waste storage, treatment and disposal areas;
  - Each underground injection well facility;
  - Springs and surface water bodies receiving stormwater discharge.
- B) An estimate of the area of impervious surfaces and total drainage area to each outfall for structures listed above in Item A, and a narrative description of materials handling practices and structural control measures used to reduce pollutants.
- C) Certification that stormwater outfalls have been tested for non-stormwater discharges not covered by NPDES permits.
- D) Existing information regarding significant leaks or spills of toxic or hazardous pollutants within 3 years prior to the date of application.
- E) Quantitative data based on samples collected during one storm event for the following parameters:
  - Any pollutant limited in effluent guidelines to which the facility is subject;
  - Any pollutant listed in the facility's NPDES permit for its process waste water;
  - Oil and grease, pH, BOD<sub>5</sub>, COD, TSS, total phosphorus, total Kjeldahl nitrogen, and nitrate plus nitrite nitrogen;
  - Flow measurements or estimates of the flow rate and total dischargers for the storm event(s) sample in addition to the methodology of measurements or estimation;

### Group Applications

#### Part I Group Application

The Part I group application will consist of:

- Identification of all participants by name and location, subdivided by EPA-defined precipitation zones.
- A narrative description of industrial activities explaining why participants are similar.
- Identification of significant materials exposed to precipitation and management practices to diminish contact with storm water runoff.
- A description of the plan for sampling discharges and a description of why the facilities selected to perform sampling are representative of the group as a whole:
- Identification of representative facilities to be used for sampling under the Part II Application.
- For large groups, at least 10 percent of the facilities must be sampled.
- For Groups of 4-10 facilities, at least 50 percent of the facilities must be sampled.

#### Part II Group Application

The Part II application will contain quantitative data related to storm water sampling of the facilities identified for detailed sampling. Also, the Part II application will contain detailed site land use and storm drainage data similar to that required for the individual permit for each group member and plans to control pollutant loads from storm water runoff. When Part I and Part II of the application are taken together, a complete NPDES application can be evaluated for each discharger.

### General Permit

The revised stormwater permitting regulations (Section 122.26(c)(1)) have a new provision which allows for industries to seek coverage under a promulgated stormwater general permit. Draft regulations describing the promulgation of general stormwater permits are currently under OMB review and comments contained herein are based on a draft copy of the regulations.

Applicants have the choice of either submitting a notice of intent for coverage under a general permit, submitting an individual application for each industrial facility, or participating in a group application for all facilities within the group.

All new or existing industrial stormwater discharges are eligible for coverage under the general permit except:

- A) Industries with existing stormwater effluent limitations (i.e. cement and fertilizer manufacturing, feedlots, phosphate mining).
- B) Industries with existing individual or general stormwater permits.

- C) Discharges reasonably expected to contribute to a violation of a water quality standard.
- D) Discharges from inactive mines on Federal lands with no identifiable owner.

#### Notice of Intent (NOI) Requirements

Industries should file a notice of intent within 180 days of the General Permit regulation publication date or 30 days prior to any construction. The NOI should contain:

- Name, location, SIC code, receiving water, quantitative data
- For construction projects; project description, # of disturbed acres.

#### Special Conditions

The draft language for the General Permits contain significant special conditions.

- A) Non-stormwater discharges to storm sewers is prohibited.
- B) Operators must continue to report oil and hazardous materials spills.
- C) A stormwater pollution prevention plan must be developed within 180 days of the General Permit Rule publication date. A brief summary of the plan contents is presented below. Plans should contain:
  1. Description of pollution sources with a site map, topographic map, and estimate of impervious surfaces.
  2. Description of significant materials stored on-site.
  3. List and description of past three years' spills.
  4. Excepting industrial sites with construction, a description of stormwater management controls including:
    - Pollution prevention committee
    - Risk identification and assessment/material inventory
    - Preventive maintenance program
    - Spill prevention and response procedures
    - Stormwater management practices
    - Special procedures for SARA Title III Section 313 Chemicals.
  5. For sites with construction, a description of the sediment and erosion controls, evidence of local government sediment control plan approval, post-construction stormwater management, and methods of waste disposal for construction debris.

#### Effluent Limitations

The stormwater effluent from SARA Title III, Section 313 Facilities must be nontoxic as measured by a 96-hour static replacement toxicity test for an appropriate fish or invertebrate. Coal Pile runoff shall not exceed 50 mg/l total suspended solids with a pH range of 6 to 9.

#### Monitoring and Reporting Requirements

Required effluent monitoring parameters are given for seven industrial groupings and a general list of monitoring parameters is given for all other industries. Stormwater samples are required once per year.

#### Standard Permit Conditions

The regulations list 21 standard permit conditions such as information on penalties, liability, severability, and record-keeping.

#### Application Deadlines

- 1) Individual applications for direct stormwater discharges associated with industrial activity.
  - Application must be submitted by the industrial discharger within 12 months of the publication date of the Final Rule, or approximately November 1991.
- 2) Group applications for direct stormwater discharges associated with industrial activities.
  - Group representative must submit Part I of the application by March 16, 1991.
  - EPA will act on Part I application within 60 days.
  - Group representative must submit Part II of the application within 1 year of EPA's approval of the Part I applications, or approximately May 1992.
  - Facilities rejected as members of a group by EPA must file an individual permit application within 1 year of the date of notification of rejection.
  - Facilities wishing to be added to a group permit application must request permission from EPA by February 1992.
- 3) General Permit Applications
  - Industries must submit a Notice of Intent for coverage under a general permit within 180 days of the effective date of the General Permit (the regulations are still in draft form).
  - Stormwater Pollution Prevention Control Plans (SPPP) must be submitted within 180 days of the effective date of the General Permit.
  - Implementation of the SPPP must be completed within 365 days of the effective date of the General Permit.

## PERMIT APPLICATION TECHNICAL REQUIREMENTS

Table 1 provides a summary of the technical requirements for individual permit applications. These requirements are similar for the Part 2 group application and are a component of the draft general permit special conditions. The additional information that would be required for the general permit would be the components of the stormwater pollution prevention plan. The information required for the general permit will likely be required within the special provisions incorporated within an individual permit issued under the individual permit application.

Table 1

Components of NPDES Individual  
Application, Form 1 and 2f  
Paragraph 122.26 C(i) p. 48066

### Site Characterization

- A. SITE MAP
  - Drainage Areas
  - Drainage Structures
  - Impervious Areas
  - Material handling areas (exposed)
  - Pollutant control facilities
  - Chemical areas (pest, herb., fert., etc.)
  - RCRA/CERCLA SWMUs
  - Injection Wells
  - Surface water bodies
- B. POLLUTANT SOURCE/CONTROLS (NARRATIVE)
  - Quantitative estimate of impervious areas
  - Total area into each POD
  - Materials exposed to stormwater (previous 3 years)
  - Exposure control practices

### Stormwater/Nonstormwater Definition

- C. CERTIFICATION OF STORMWATER/NONSTORM-WATER
  - Smoke tests
  - Dye tests
  - Accurate schematics
- D. SPILLS WITHIN 3 YEARS

### Data Collection

- E. QUANTITATIVE DATA

The permit application consists of three basic components: site characterization, stormwater/nonstormwater definition, and quantitative data. The site characterization consist of a plan

definition of the site in terms of drainage characteristics. This includes drainage structures impervious areas, material handling areas, chemical areas, SWMNs, and water bodies. Included in this information is quantitative data concerning estimates of impervious areas, total drainage areas, as well as exposure control practices.

The stormwater/nonstormwater definition is perhaps the most critical for the permitting process. The permit requires that the permittee certify that an assessment has been conducted for the presence of nonstormwater discharges into the stormwater system. It should be noted that the general permits will only be applicable to PODs that are discharging stormwater only. For this regulatory program, stormwater does not include diverted stream flows, landscape irrigation in ground water, infiltration inflow, potable water, cooling tower water, HVAC drainage, foundation/footing drain water, car wash water and lawn irrigation.

The presence of water from any of the above sources would place the water being monitored or permitted at a specific POD into a category separate from stormwater discharge. The difference involves the requirement for identification of a much broader set of potential pollutant parameters.

The certification that nonstormwater discharge is not present at a particular POD can be based on smoke test, dye test, or accurate schematics. It should be noted that, at least under the general permit conditions as currently drafted, certification that the POD does not contain nonstormwater discharges must be by a professional engineer.

The areas that are included within the NPDES stormwater permit program are listed in Table 2. Virtually all areas within in an industrial facility with an SIC code covered under the regulations are covered under the NPDES stormwater permitting program. The exceptions are office buildings, parking lots, and undeveloped areas which have no co-mining with areas that may contain exposure to industrial activities.

Table 2

### Areas Covered

- Industrial Plant yards
- Immediate Access roads
- Rail Lines for manufactured products
  - Waste material
  - By-products
- Material handling
- Refuse sites
- Application or disposal of process wastewater
- Storage/maintenance of material handling equipment
- Residual treatment, storage, or disposal
- Shipping and receiving areas
- Manufacturing buildings
- Storage areas (including tank farms) for raw materials intermediate finished products
- Past industrial activities



Table 2 - Continued

## Excluded

Office Buildings  
Parking Lots  
Undeveloped Areas

## Quantitative Data Requirements for Application

The quantitative data for the individual permit application includes information for rainfall, stream flow rates, and water quality. The requirements for establishment of the quantitative data includes selection of sampling points, rainfall event definition, establishment from the sampling decision route, selection of rainfall/flow monitoring techniques, and selection of sampling technique.

With regard to rainfall the regulations are quite specific in that a rainfall event greater than 0.1 inches and that more than 72 hours from the previous 0.1 inch per hour rainfall is required. In addition, the rainfall depth and duration should be within 50 percent of the median depth and durations for rainfall events in the area of the subject property. A sample decision tree for selection of appropriate rainfall events for sampling for the permit application data is provided in Figure 1.

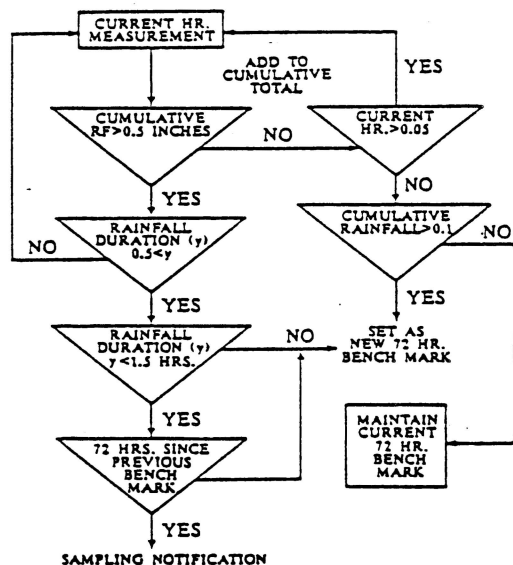


Figure 1. Sampling Decision Tree

A summary of the options for the measurement of rainfall flow and flow are provided in Table 3. Typically for the permit application, the simplest and most economical method will be manual sampling of rainfall flow and water quality. Exceptions will be instances in which long term stormwater pollution prevention control measures require accurate definition of the rainfall runoff relationship. In these instances automatic gauges for both rainfall and flow will be useful.

Table 3

## Measurement Options

## Rainfall Measurement

Forest Service Gages  
Mechanical  
Tipping Bucket

## Flow Measurement Options

## Control Structures

Normal flow Stage/Discharge  
Existing controls  
Flumes  
Weirs  
Pipe weirs

## Gages

Manual Staff Gage  
Mechanical float gage (Stevens)  
Electronic Pressure transducers (Hydroscout)  
Bubbler gage (ISCO)

## Permitting Strategy

A permitting strategy schematic is shown on Figure 2. This schematic demonstrates the decision tree for selection of an individual, group, or general permitting approach for obtaining a stormwater permit.

The pros and cons are applying for individual group or general permits are provided on Tables 4 through 6.

Table 4

Permitting Approaches/Implications  
Individual Permit Application  
Pro's and Con's

## PRO'S

- Permit Conditions Tailored to Site
- Highest Level of "Procedural Certainty" (at present)
- Application Requirements Clear

## CON'S

- Highest Cost Approach for Applicant (in general)
- Requires Much Effort Before 11/18/91
- Resource Intensive for Regulators
- Permit Conditions Not Spelled Out in Rule

Table 5

Permitting Approaches/Implications  
Group Permit Application  
Pro's and Con's

PRO'S

- Cost Savings Possible From Reduced Sampling/Analysis
- May Provide Permit Consistency Across Business
- Defers Deadline for Sampling/Analysis (Compared to Individual Application)
- Permit Conditions Tailored to Group

CON'S

- Deadline for Part 1 Application (3/18/91)
- Group "Acceptance" Criteria Not Well-Defined (EPA/State)
- May Not Be Acceptable in all States
- State May Reject EPA Model Permit
- Permit Conditions Not Spelled Out in Final Rule

- If Process Wastewater Dissimilar, Group Application May Not Be Accepted

Other Factors to Consider

- State Acceptability
- Distribution Among Precipitation Zones
- Percentage of Group Required to Submit Data
- Timing of Parts 1 and 2

SUMMARY

Planning for satisfying the new CWA stormwater permit application requirements should take into account the long-term impact of the ultimate permit language. Application requirements vary significantly between the different types of permitting approaches, but the major concern should be the special conditions that must be satisfied in the Final Permit. The focus of the program is the elimination of containments from stormwater. Ultimately, the control of economic impact will revolve around effective definition and elimination of uncontrolled contaminated stormwater discharge.

Table 6

Permitting Approaches/Implications  
General Permit  
Pro's and Con's

PRO'S

- Least Cost "Application" (NOI only)
- Permit Conditions Defined When General Permit Issued
- Promotes Consistency Across Regulated Community
- Pollution Prevention Philosophy
- Least Resource Intensive Approach for Regulators

CON'S

- Draft General Permit Still at OMB
- Some States Not Authorized to Issue General Permits
- Authorized States May Change Permit Conditions and/or Application Requirements
- Conditions in Draft General Permit Not Ideal

Table 7

Permitting Approaches/Implications  
Criteria for "Acceptable" Groups

- Very Little Guidance in Final Rule
- Facilities in Same Effluent Guideline Subcategory
- Facilities with Similar:
  - Operations
  - Wastewater Discharges
  - Effluent Limits
  - Monitoring Requirements

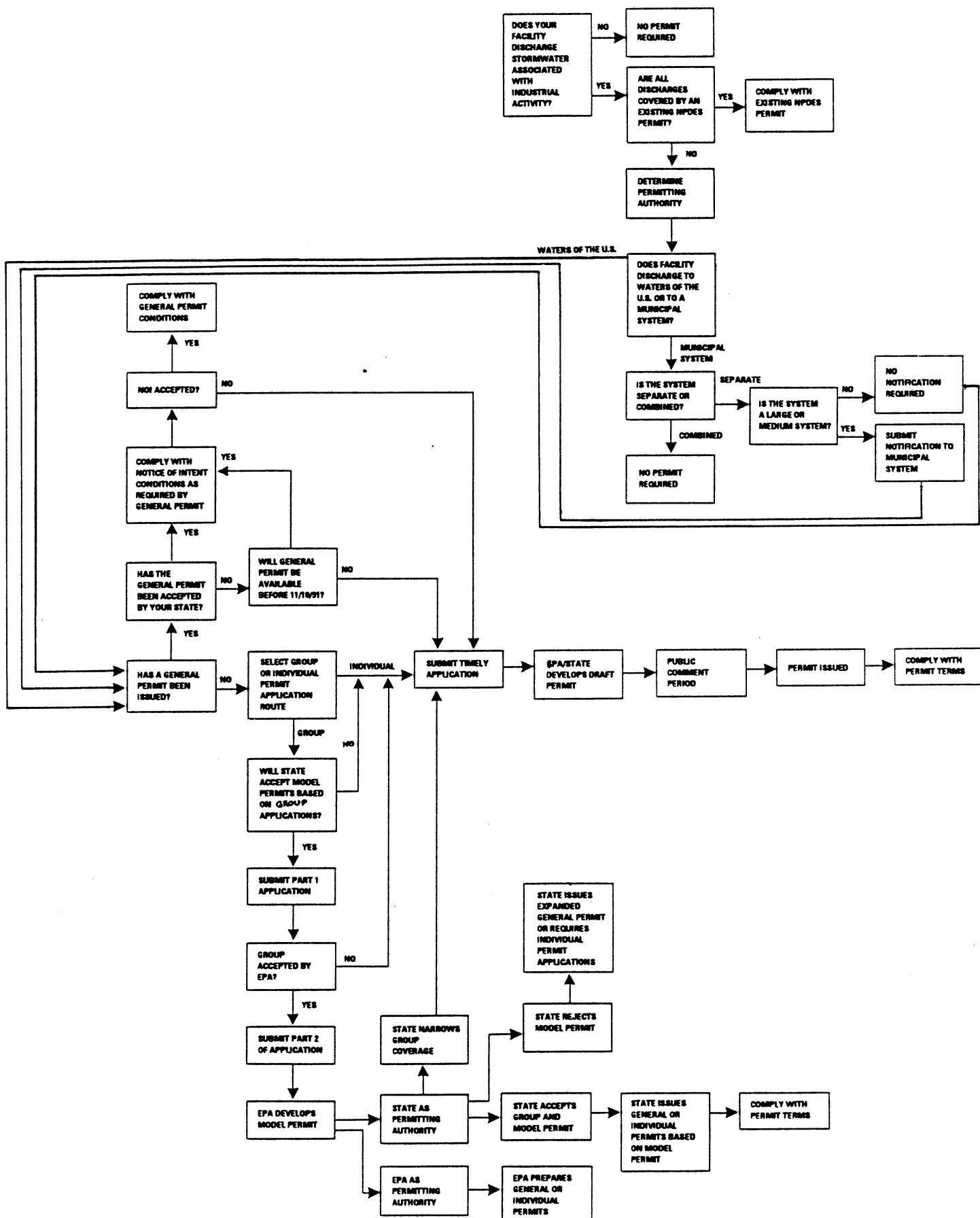


Figure 2. Stormwater Permitting Strategy